

Chemicals risk assessment and risk management

Some examples of current global work

Serbia workshop

Geneva - 14 September, 2023





Risks...

Rotterdam
Convention

Minamata
Convention

Chemical
Accidents

PRTR

GHS

Stockholm
Convention
PCBs and other POPs

Basel
Convention

Contaminated
sites

Risks...

Chemicals
placed on
the market

Industrial chemicals





Basics

$$\text{RISK} = \text{HAZARD} \times \text{EXPOSURE}^*$$

*vulnerability

Hazard: Ability to cause damage (intrinsic property, constant, universal)

Exposure: Contact of a population or individual with a chemical agent.

Risk: Probability of harm/adverse effect occurring / It depends on conditions of use, it is variable, local

Risk analysis vs risk assessment

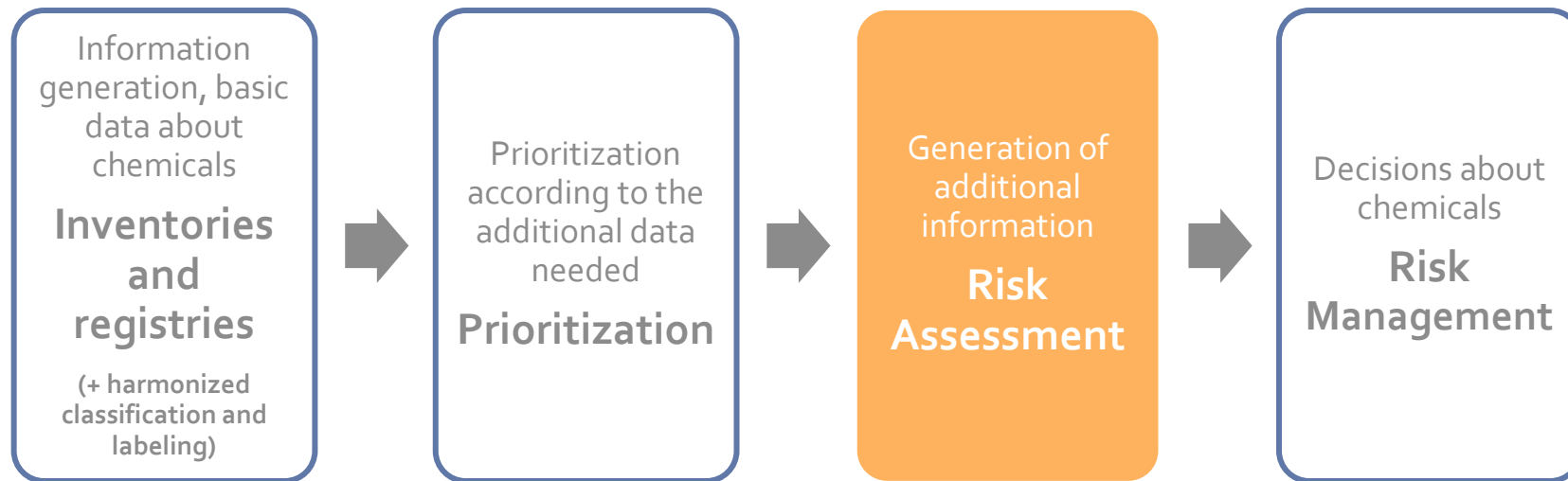
Risk analysis

Includes three elements : evaluation of risks, management of risks and communication of risks

Risk assessment

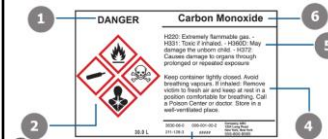
Scientific analyses that results on quantitative or qualitative expressions of the probability of harm associated with exposure to a chemical

The regulatory process

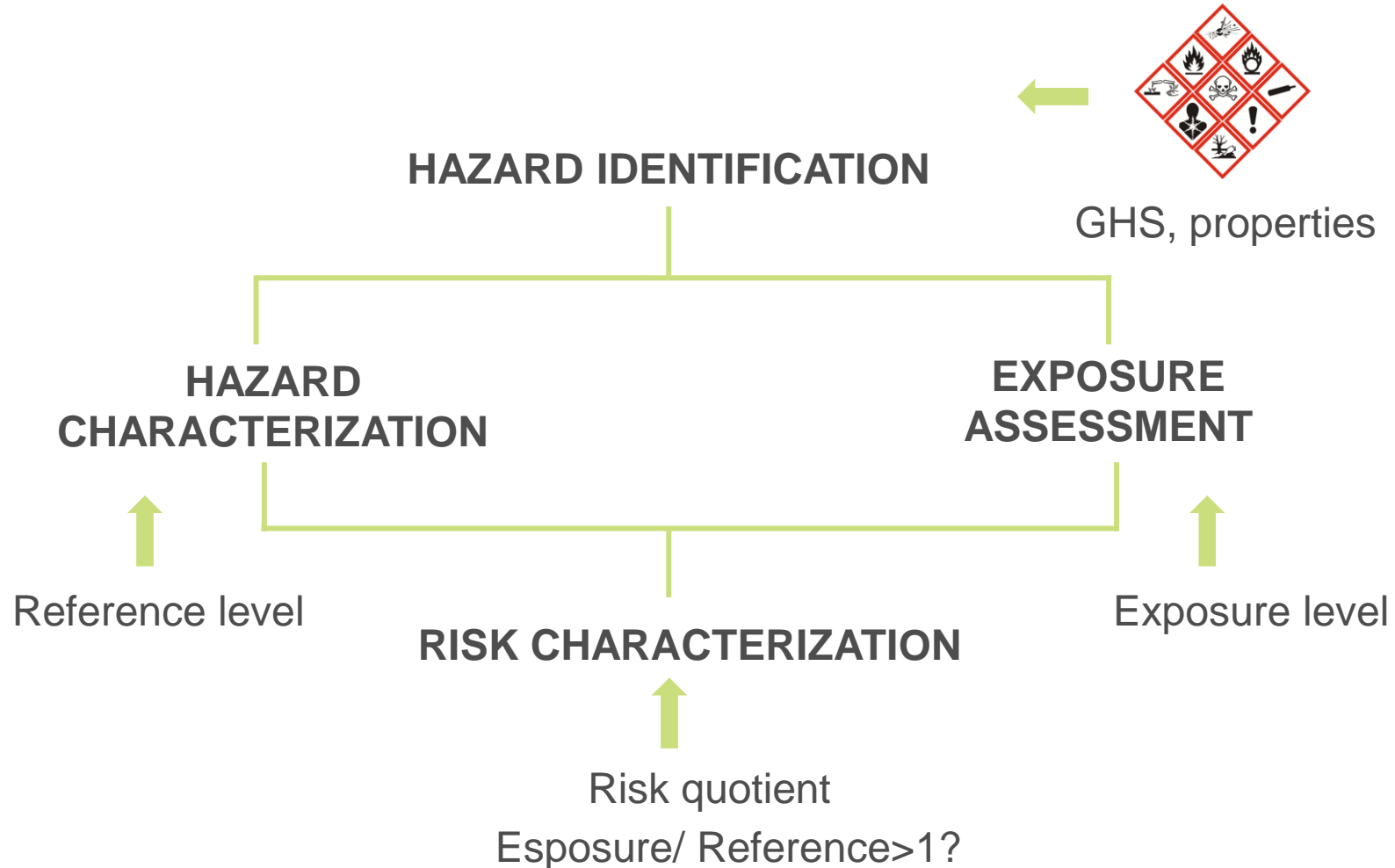


Objective of this process

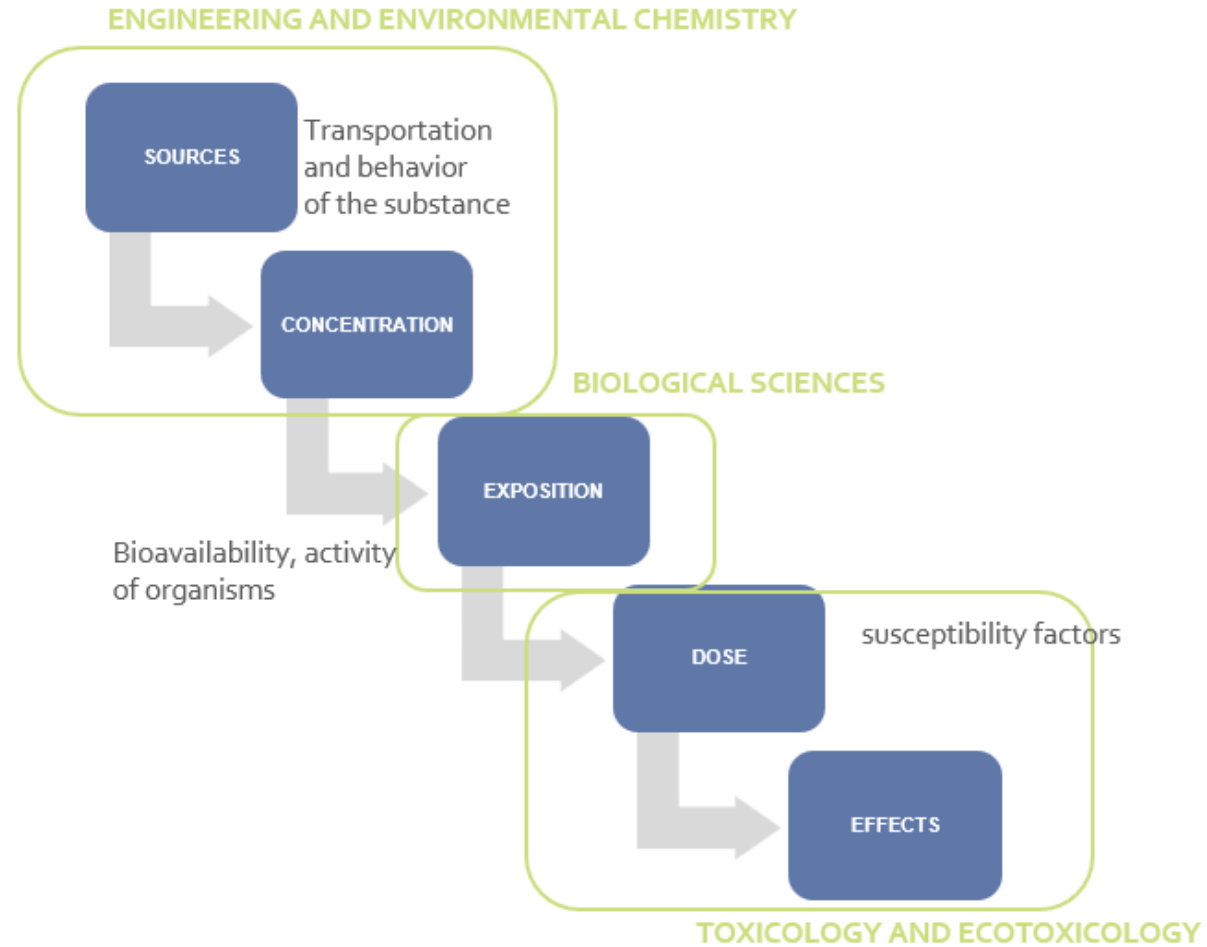
	Risk	Risk management
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Severity</p> <p style="text-align: right;">-</p> <p style="text-align: right;">+</p>	The health of users is threat because the users do not have enough information to use the product	Instructions are given for safe use: classification and communication through labelling and safety data sheets
	The use of products massively generates hazardous waste difficult to manage for its hazardous substance	The use of certain hazardous substances in the products is restricted
	The uses of an specific substance that is very hazardous have benefits that oppose the risks they represent	An authorization prior to placing on the market is required
	Same case above, but a safer alternative to the hazardous substance exists and represents minimum risks for the same applications	The sale and purchase of the substance is prohibited



The steps of a risk assessment process



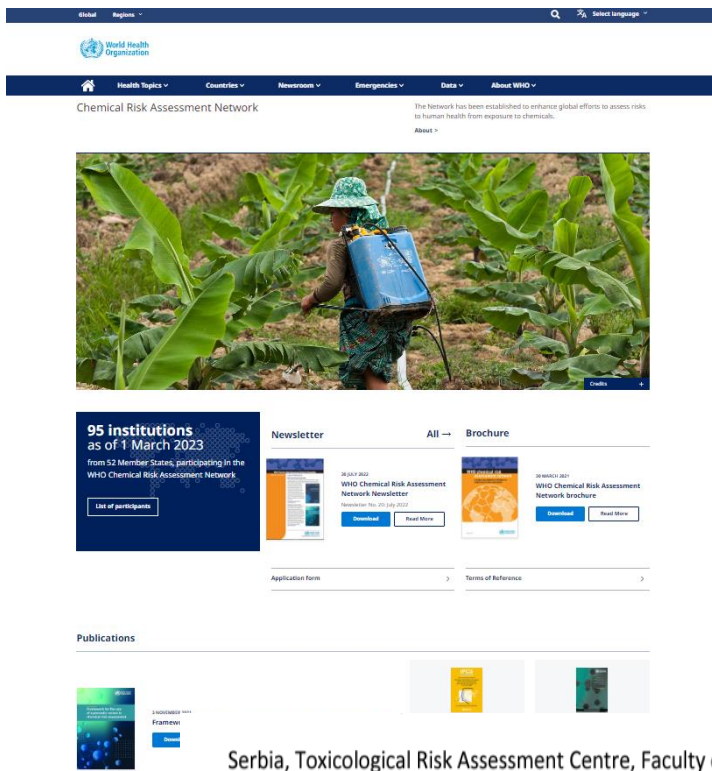
Related disciplines



Global efforts towards harmonization

Harmonized methodologies

Some examples



The screenshot shows the WHO Chemical Risk Assessment Network website. At the top, there is a navigation bar with 'Global' and 'Regions' dropdowns, a search icon, and a 'Select language' dropdown. Below this is the WHO logo and a secondary navigation bar with 'Home', 'Health Topics', 'Countries', 'Newsroom', 'Emergencies', 'Data', and 'About WHO'. The main content area features a large image of a person in a field spraying crops. Below the image, there is a section titled '95 institutions as of 1 March 2023' with a 'List of participants' button. To the right, there are sections for 'Newsletter' and 'Brochure' with 'Download' and 'Read More' buttons. At the bottom, there is a 'Publications' section with a 'Download' button and a 'Serbia, Toxicological Risk Assessment Centre, Faculty of Pharmacy, University of Belgrade' link.

WHO Network on Risk Assessment of Chemicals
Created in 2014, this group contributes significantly to the development of harmonized approaches and approaches for risk assessment
<https://www.who.int/groups/chemical-risk-assessment-network>

KEY AREAS OF WORK

[Hazard Assessment](#)


OECD works with member countries and other stakeholders to cooperatively assess the hazards of industrial chemicals to generate OECD-agreed assessments that are available to the public and that can be used for priority setting, risk assessment and other activities within national or regional programmes.

[Exposure Assessment](#)

Risks of chemicals on human health and the environment are assessed by combining the chemical-specific hazard data and the estimation of the extent to which man and other organisms are exposed to chemicals. OECD has been working mainly on environmental exposure assessment for more than 10 years.


USER TOOLS

[eChemportal](#)



eChemPortal is an Internet gateway to information on the properties, hazards & risks of chemicals found in the environment, homes and workplaces, and in everyday products.

[QSAR Toolbox](#)




The Toolbox is a software application to identify and fill (eco)toxicological data gaps for chemicals hazard assessment. Grouping chemicals into chemical categories is crucial to the workflow.

[Risk Assessment Toolkit](#)




This environmental toolkit gives access to practical tools on environmental risk assessment and mgt of chemicals, by linking to relevant OECD products that can be used in each step of the work flow.

[International Uniform Chemical Information Database \(IUCLID\) 6](#)




IUCLID 6 is a software application designed for regulatory bodies and industry to record, store, maintain and exchange data on chemicals.

[Harmonised Templates](#)



The OECD Harmonised Templates are standard data formats for reporting studies done on chemicals to determine their properties or effects on human health and the environment.

[Product Release and Exposure Data Warehouse](#)



The Warehouse is a database designed to house existing data on releases of chemicals from, and exposures to, commercial and consumer end products.

OECD
OECD assists countries in developing and harmonising methods for assessing risk to human health and the environment, including methodologies for hazard and exposure assessment.
<https://www.oecd.org/chemicalsafety/risk-assessment/>

New practical training tools and methodologies

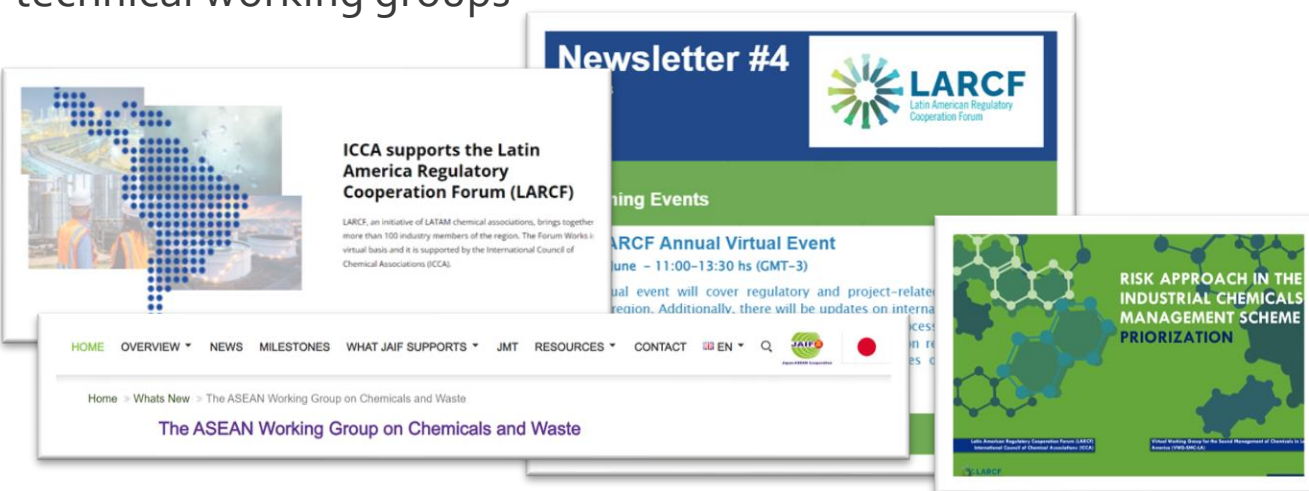
Some examples

Hybrid Course:
Fundamentals of prioritization
and risk assessment of industrial
chemicals

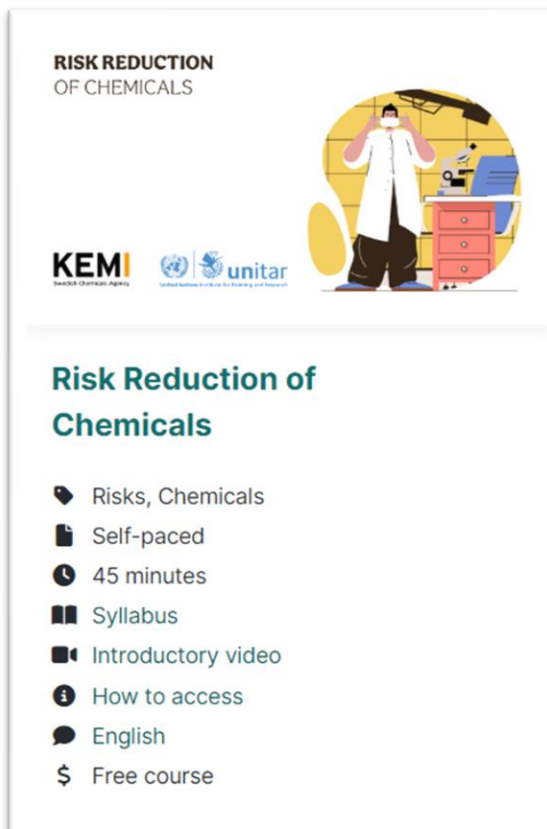
for Latin America and the Caribbean




Multisectoral and
technical working groups




KEMI/UNITAR
Free online courses



**RISK REDUCTION
OF CHEMICALS**



KEMI 

**Risk Reduction of
Chemicals**

- Risks, Chemicals
- Self-paced
- 45 minutes
- Syllabus
- Introductory video
- How to access
- English
- Free course

UNITAR
Free Platform



 Home Safety Modules Webinars Projects Contact Us



**Alignment with OECD Standards
for Chemicals Management**

An OECD-UNITAR Capacity Building Programme

The OECD and UNITAR have collaborated over many years on multiple chemicals and waste topics, as part of the ICAC. These activities include pollutant release and transfer registers (PRTR), the Globally Harmonized System of Classification and

**Alignment with OECD Standards
for Chemicals Management**

- Chemicals Management, PRTR
- Self-paced
- English
- No fee

Final thoughts

- Need for more staff & opportunities of joint work with Academia
- Preparation of Academia in regulatory toxicology and ecotoxicology
- In summary: multisectoral participation



Some references and acknowledgements

- Course on Fundamentals of prioritization and risk assessment of industrial chemicals for Latin America and the Caribbean (UNEP/KEMI/BC Regional Center in Uruguay)
- Kemi materials (ITP)
- World Health Organization Guide – Health Risk Assessment Toolkit (2021)
- ICCA/LARCF VWG on the sound management of industrial chemicals



Thanks!

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